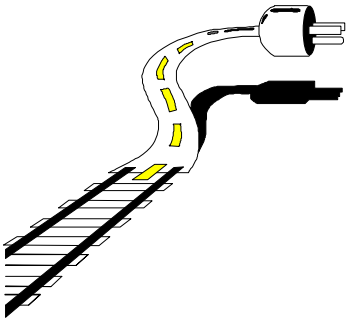


Station Cars:
Transit Based Smart Car Sharing

Concept Paper

by the

National Station Car Association

Benefits to Mass Transit

Station cars are a new tool to increase access to line-haul transit and thus increase ridership. They are small, privately driven, environmentally clean cars. Benefits include:

- increased access due to guaranteed parking
- access from suburban stations to suburban jobs
- mid-day, evening, and weekend station access when local bus service may be minimal
- increased capacity of station parking facilities by a factor of at least 10 through queuing and multiple use of the cars, i.e., the cars don't sit at the station all day taking up parking space
- opportunities for joint development revenues from land no longer dedicated to parking
- revenues from the station car service provider

Prototype station car at the Ashby BART Station in the San Francisco Bay Area. Forty of these 2-seat station cars, imported from PIVCO in Norway, accumulated 150,000 miles during the initial demonstration.

Components

A typical ***station car*** in the future will be battery-powered, have two seats, be freeway capable, but would have a more limited range and fewer amenities than electric vehicles (EVs) for the mass market. Station cars will be able to serve essentially all local trips away from the station. Some station cars will be smaller or larger depending on the trip requirements.

Station cars will be rented more than once a day by different users—this is called ***multiple use.***

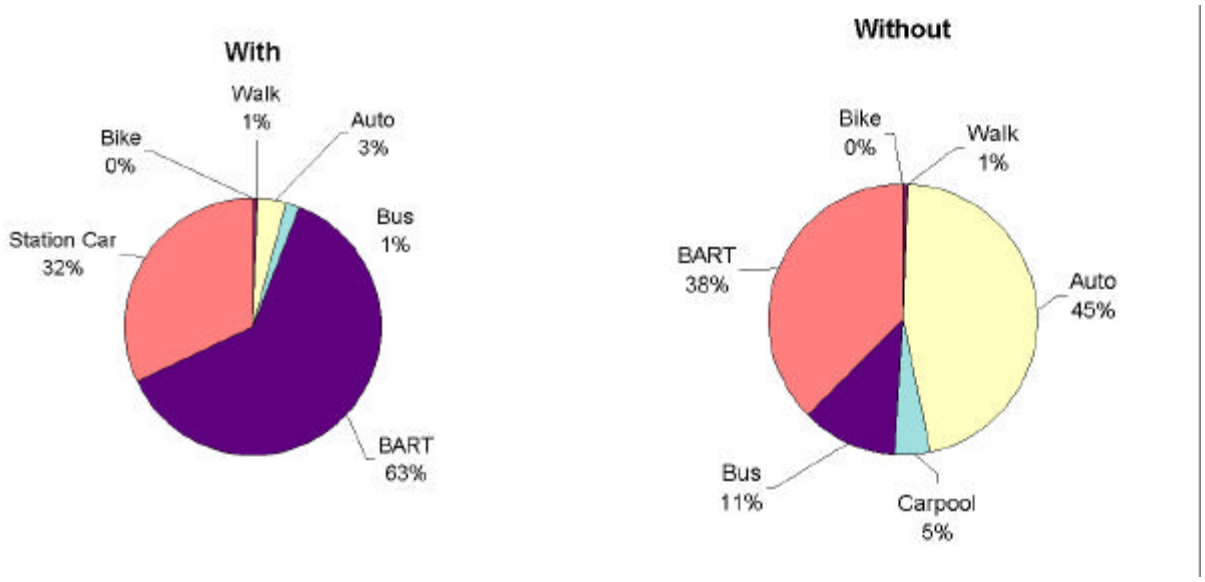
A ***station*** is a place for quickly renting and returning a station car, for charging and storing station cars, and for cleaning and performing some level of maintenance on the cars. Initially stations are located at mass transit stations, but eventually stations could be located at places that require high regular access, e.g., university campuses, convention centers, airports, and residential and commercial complexes.

Station car ***intelligent electronics*** will be the computer-based system for managing reservations, access, user accounts, and station car fleets.

Station cars will be kept and charged in ***queues*** to minimize space requirements and maximize use (first in, first out).

Station cars will require ***unique hardware*** for queuing, charging, and cleaning.

Station car service would be provided by the private sector even though some stations might be on public land, e.g., transit station parking lots and college campuses.

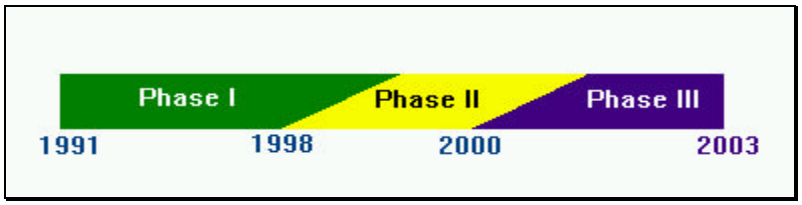


Modal Splits for the participants in the San Francisco Bay Area initial demonstration, during the demonstration (With) and if the demonstration had not occurred (Without).

Benefits to Individuals Society

Reduced automobile ownership at little or no loss in mobility will be a cost savings to households. The hassle of maintaining and fueling a car will be removed. The station car provider may offer a variety of vehicles so a participating household could, for example, have access to a pickup truck or other specialty vehicle when needed. And, of course, small electric vehicles (EVs) provide air quality benefits (even if the power is generated by coal), water quality benefits, reduced urban noise, and less dependence on foreign oil.

Status of the National Station Car Program



We are at the beginning of the transition from Phase I to Phase II. Phase I's goals are to show that electric cars can perform the driving cycles associated with a station car service and that many drivers can use electric cars without difficulty. These goals are being accomplished with both ground-up prototypes and conversions in five demonstrations around the country. Phase I also includes team building both on a regional and national/international level. The involvement at this early stage of many of the potential agencies and firms that could make station cars viable should make accomplishing the next two phases much easier.

Converted Geo Metro station cars charging at the Morristown, NJ, NJTransit station.

Energy and Air Emission Results of the San Francisco Bay Area Initial Demonstration

(Excludes BART and buses since there was no change in the number of trains and buses run. Gallons = gallons of gasoline for conventional cars and kWh for station cars converted to equivalent gasoline gallons including inefficiencies in the electrical system.)

	If it had not Occurred	During	Percent Reduction
Gallons	12,969	5,286	59.2%
ROG (tons)	0.262	0.017	93.5%
NO_X (tons)	0.353	0.007	98.0%
CO_2 (tons)	128	12.8	90.0%

Called the e.com by Toyota, this electric car may make an excellent station car when introduced in 1999.

Phase II is to initiate additional demonstrations in other urban regions and to show the acceptability of multiple use station cars. This will determine and resolve issues of not having vehicles dedicated to a single driver. It will also reveal the challenges of "renting" each vehicle multiple times each day. Phase II includes demonstrating the intelligent electronics to support multiple use including reservations, vehicle location, and billing.

Phase III is to minimize the costs out of providing a station car service so that by 2003 the concept can be fully and profitably commercialized. This means reducing the labor intensity and developing and deploying the unique hardware and software required to make station cars cost-effective and profitable.

The Start of Phase II

Atlanta is planning a multiple-use demonstration at Emory University to start in early 1999. But BART has taken the lead in initiating Phase II. In cooperation with the City of Berkeley and an employer in Alameda, BART is testing multiple uses of its current station cars. So, to further test the concept, BART has accepted an offer of 12 new compressed natural gas cars from Honda to do a multiple-use field test at its new Dublin/Pleasanton Station. Home-end BART commuters will take the cars home overnight and on weekends, Lawrence Livermore National Laboratory employees will take the cars from the station to the lab (10 miles) each workday, and the cars will be used for "car sharing" at the lab during the day. The intelligent electronics will come from Europe.

For some trips, larger cars will be available such as this Honda EV-Plus now being offered in California.

For additional information visit www.stncar.com

Or contact the Association at stncar@ix.netcom.com